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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/691,234	10/19/2000	HIROSHI TSUJI	862.C2032	5023

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NEW YORK, NY 10112

EXAMINER

BERMAN, JACK I

ART UNIT	PAPER NUMBER
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2881

DATE MAILED: 06/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/691,234

Applicant(s)

TSUJI ET AL.

Examiner

Jack I. Berman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 March 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,2,7-15 and 18-20 is/are allowed.
- 6) ☒ Claim(s) 3-6, 16, 17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10/19/2000 and 03/18/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-6 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Markle in view of Petric. As was explained in the previous Office action, Markle discloses a moving stage 600 comprising a magnetic constraint structure, which may include a Halbach array of permanent magnets 798 attached to the stage, and a plurality of driving coils 500, 502, 812, 814, 816, and 818 which function to drive the stage. At lines 50 in column 15 through 8 in column 16, Markle teaches that this stage can be used with electron beam lithography apparatus, but in order to do so without interfering with the electron beam, two magnetic shields must be provided: the first shield 822 between the electron beam source (not shown) and the wafer to be drawn on (which inherently shields magnetic fields leaking from the electron optical lens-barrel used to form the beam into the internal space in the sample chamber); and a second shield 824 to shield a leakage magnetic field from the magnetic constraint structure (magnets 798 and coils 500, 502, 812, 814, 816, and 818) from leaking into the internal space of the sample chamber where the wafer 602 is located. While Markle does not describe any of the electron optics used to form and control the electron beam 820, it would have been obvious to a person having ordinary skill in the art to use the known electron column 10 illustrated in the Petric patent to control the beam by lenses and deflectors since such control is well known in the art. In the amendment filed on March 3, 2003, Applicant amended claim 3 to distinguish over Markle by claiming a single-axis electromagnetic drive for driving the sample stage in a single direction in contrast to the Markle system, which, as Applicant correctly notes, provides means to drive the sample stage in two

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orthogonal directions. The amendment does not distinguish over the combination of Markle and Petric discussed above because the omission of a means to drive the sample stage in a second direction with a consequent loss of this function would have been obvious to a person having ordinary skill in the art if there was no need to drive the stage in such a second direction.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Markle and Petric as applied to claims 3-6 and 17 above, and further in view of Numaga (Japanese Utility Model Publication 6-44093). Markle attaches the electromagnetic drive means directly to the sample stage. Numaga, on the other hand, teaches to shield an electron beam in an electron beam lithography apparatus from perturbations in the ambient magnetic field caused by movement of a moving member which drives a sample stage by placing this moving member within a magnetic field shield (19) and connecting the moving member to the sample stage through a small opening in the magnetic field shield. It would have been obvious to a person having ordinary skill in the art to place the moving components of Markle's electromagnetic drive means inside a magnetic field shield and to connect this drive means to the sample stage through an opening in the shield in the manner taught by Numaga in order to reduce magnetic perturbations as Numaga teaches.

Claims 1, 2, 7-15, and 18-20 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The prior art teaches to provide magnetic shielding around a means for electromagnetically moving a sample stage in an electron beam lithography apparatus, not around means for magnetically applying a pre-load to the stage.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

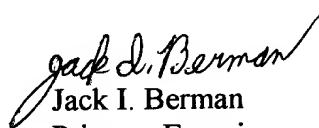
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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack I. Berman whose telephone number is (703) 308-4849. The examiner can normally be reached on M-F (8:30-6:00) with every second Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (703) 308-4116. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

  
Jack I. Berman  
Primary Examiner  
Art Unit 2881

jb  
June 1, 2003